Case Study

Independent Product Verification and Validation -
Automated Testing for Mainframe Integration Products

⤴ THE CUSTOMER

A world leader in data connectivity and mainframe integration software. They offer the most comprehensive line of software for connecting critical applications to data and services, running on any platform, using proven and emerging standards.

⤴ THEIR NEED

The customer had a mainframe integration suite developed over eight years and did not have any formal testing carried out on their products during this time. As they were embarking on an exercise to enhance existing products and add new features, they felt a need for automating their product suite and wanted a dedicated product testing team to do this. They wanted this team to bring in process discipline and automate testing of both the existing and new product features.

⤴ OUR DEED

Aspire defined a framework to increase the reuse of scripts and thus minimized product maintenance. Aspire also used test automation tools and developed automation scripts that were highly robust, configurable and reusable. In one instance, the use of automated test scripts reduced the test cycle for ODBC/JDBC driver development from 3 weeks to 2 days. Aspire continues to fine-tune the customer's automation processes, automate new test cases and ensure high-quality product releases.

⤴ TOOLS USED

Test Automation Tool - WinRunner 7.6
Test Management Tool – TestDirector 8.0

AUTOMATED TESTING FOR MAINFRAME INTEGRATION PRODUCTS

Our customer delivers the only unified Mainframe Integration platform to support the entire range of requirements for Service-Oriented Architectures (SOA) and Event-Driven Architectures (EDA) – key requirements to underpin the Real-time Enterprise. The product that Aspire tests, comprises of the following:

Server:

An address space running on an IBM z/OS mainframe system, capable of handling multi-threaded requests. It enables communication via standard interfaces to various mainframe subsystems like ACI, ADABAS, CICS, IDMS, IMS/TM, IMS/DB and VSAM. It supports SQL Data access, Events and Web Services for all relevant mainframe

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Key benefits to the customer:

Aspire used WinRunner and Test Director to verify and validate all existing and new product features of the customer's mainframe integration product suite. The automation scripts developed by Aspire were much appreciated by the customer – they were robust, configurable and reusable. This reduced testing cycle times and improved product quality.

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aspire SYSTEMS

Transforming Product Development

supports SQL Data access, Events and Web Services for all relevant mainframe subsystems and also provides extensive diagnostic capabilities.

Client:
A suite consisting of ODBC, JDBC and JCA drivers, compliant with the respective industry specifications and enabling any client to communicate with mainframe subsystems via the customer's proprietary Server.

Studio:
An IDE that enables the user to perform a quick proof-of-concept for testing and deploying data access, events and web services capabilities on the mainframe.

Automated testing activities were executed in three phases, by adopting well-defined, tailored processes that would suit the test automation requirements. Reviews were conducted at each phase, to ensure the quality of the delivered automation scripts.

Design Phase:
This involves a detailed analysis of the scenario to be automated. At the end of this phase, a design document defining the high level design of the script is created. The test data that will be used in the script is defined in this phase. This document is reviewed to assess the suitability of implementing the test case.

Scripting Phase:
The automation script is developed on the lines of the script design developed. The script is executed and tested on the development environment. Code review is then performed, to verify if scripting standards and guidelines are followed and to ensure that the script handles both positive and negative scenarios. A review is done to ensure the efficiency of the test scripts.

Testing Phase:
Automation scripts are tested on the production environment, to ensure that all defects are identified and rectified before final delivery to the customer. The automation scripts created are managed and tested by scheduling the same in the Test Director tool.

The design of the scripts and the standards adopted by the Aspire testing team enabled a high-level of configuration of the automation scripts and easy addition of new test cases. They also allowed reusability of test scripts.

Our team also suggested preparing of scripting standards and guidelines, to ensure that the scripts developed by different members were consistent and they could be easily maintained in the future. Another suggestion made was to have a design document for each scripting assignment to highlight the working of the script, in order to ensure that the overall direction was correct. The customer liked the above suggestions and encouraged the team to implement them during the course of the project, with positive results.

Key benefits to the customer:

Aspire was also able to put a proper test automation process in place for the customer and ensured scripting standards by documenting guidelines for the same.

Automated Testing for Mainframe Integration Products

Challenges:

There were a couple of challenges during the initial period of the project. One involved understanding the functionalities of the various integration products in the suite, which were quite complex. Another challenge was due to the fact that 75% of the product was mainframe oriented. Onsite training on the product suite for a period of 3 months, documentation and knowledge transfer internally, especially on the mainframe components, helped in overcoming the above challenges effectively.
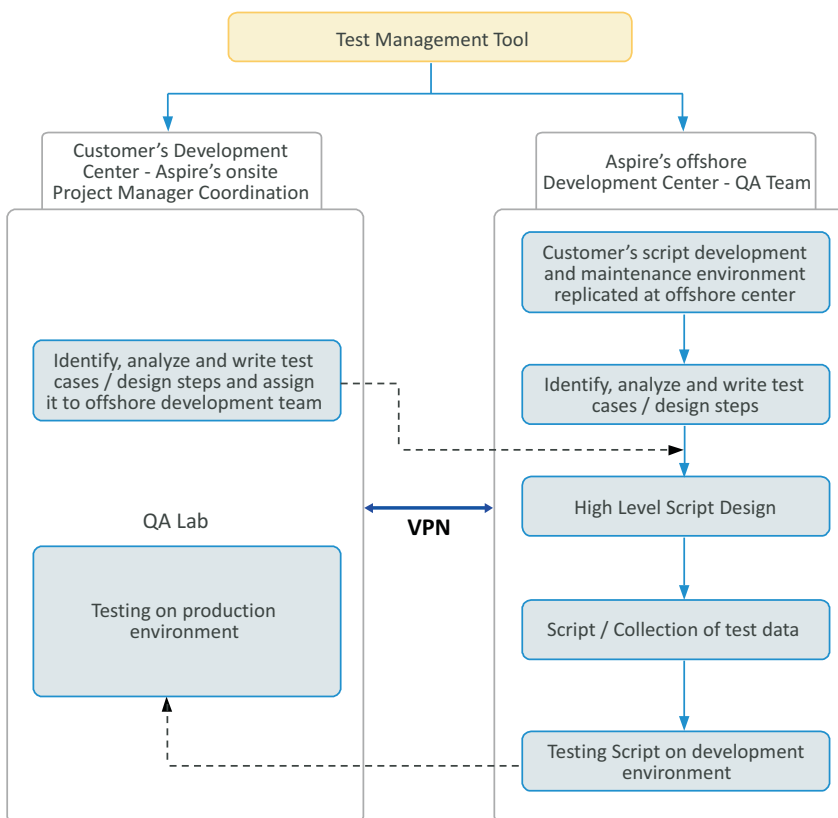
The effect of Automation

Aspire automated most of the test cases that were required to verify and validate the existing features of the customer's product suite. Some tests that verified the new features were also automated. These tests were executed every night a couple of weeks before a release, to ensure that new features were integrated successfully.

As most of the tests for the existing features were automated, the testing team now only had to focus on testing the new features being developed and analyzing the automation test results. This reduced testing time cycles and ensured quality product releases. The automation script is executed on various platforms like Win XP, Win 2K-Pro, Win 2K Server, Windows NT, Linux, Linux_AS, z_Linux, Solaris, SCO, AIX, HP, HP-Itanium and Os390.

Automation Workflow:

Key benefits to the customer:

Aspire continues to be the customer's product testing team - fine-tuning testing processes, automating new test cases and ensuring high-quality product releases.

ABOUT ASPIRE SYSTEMS

Aspire Systems is an Outsourced Product Development firm committed to helping our customers build software products better and faster. We work with some of the world's most innovative Independent Software Vendors and software-enabled businesses, ranging from start-ups to established industry leaders, transforming the way software is built.

Aspire provides complete product lifecycle services, ranging from new product development and product advancement to product migration, re-engineering, sustenance and support. Our product development teams are spread between our Global Innovation Center in Chennai, India and offices in the United States.

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